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CLAIMS

1. An oscillator circuit comprising a first LC-oscillator and a second LC-oscillator, the first LC-oscillator comprising a resonance inductor, the second LC-oscillator comprising a resonance inductor, the first LC-oscillator and the second LC-oscillator having substantially the same fundamental frequencies, **characterized in that** the resonance inductor of the first LC-oscillator is coupled by mutual inductance to the resonance inductor of the second LC-oscillator, to thereby enable the first LC-oscillator and the second LC-oscillator to frequency lock to each other.

2. The oscillator circuit according to claim 1, **characterized in that** the oscillator circuit comprises a third LC-oscillator, the third LC-oscillator comprising a resonance inductor, and in that the resonance inductor of the third LC-oscillator is coupled by mutual inductance to at least one of the other resonance inductors of the other LC-oscillators.

3. The oscillator circuit according to claim 2, **characterized in that** the oscillator circuit comprises a fourth LC-oscillator, the fourth LC-oscillator comprising a resonance inductor, and in that the resonance inductor of the fourth LC-oscillator is coupled by mutual inductance to at least one of the other resonance inductors of the other LC-oscillators.

4. The oscillator circuit according to claim 1, **characterized in that** the oscillator circuit comprises an arbitrary number of further LC-oscillators, each further LC-oscillator comprising a resonance inductor, and in that each of the resonance inductors of the further LC-oscillators is coupled by mutual inductance to at least one of the other resonance inductors of the other LC-oscillators.

5. The oscillator circuit according to any one of claims 1 to 4, **characterized in that** the mutual inductance coupling between the resonance inductors of the LC-oscillators is achieved by at least partly intertwining the inductor windings of the respective resonance inductors which are inductively coupled by mutual inductance.

6. The oscillator circuit according to any one of claims 1 to 5, **characterized in that** the LC-oscillators have substantially identical circuitry.

7. The oscillator circuit according to any one of claims 1 to 6, **characterized in that** a fundamental frequency of the LC-oscillators is substantially a same frequency for all of the LC-oscillators.

8. The oscillator circuit according to any one of claims 1 to 7, **characterized in that** the LC-oscillators are differential LC-oscillators, where each differential LC-oscillator comprises at least one fundamental frequency AC-ground due to the differential symmetry.

9. An oscillator arrangement comprising a first oscillator circuit and a second oscillator circuit, each oscillator circuit being according to claim 8, **characterized in that** the oscillator arrangement comprises a first AC coupling between one of the at least one fundamental frequency AC-ground points of the first oscillator circuit and one of the at least one fundamental frequency AC-ground points of the second oscillator circuit, thus locking the first oscillator circuit to the second oscillator circuit.

10. The oscillator arrangement according to claim 9, **characterized in that** the first oscillator circuit and the second oscillator circuit are substantially identical.

11. The oscillator arrangement according to claim 10, **characterized in that** the first AC coupling is between a first fundamental frequency AC-

ground point of the first oscillator circuit and a first fundamental frequency AC-ground point of the second oscillator circuit, the first fundamental frequency AC-ground points being identical fundamental frequency AC-ground points.

12. The oscillator arrangement according to claim 11, **characterized in that** the oscillator arrangement comprises a second AC coupling between a second fundamental frequency AC-ground point of the first oscillator circuit and a second fundamental frequency AC-ground point of the second oscillator circuit, the second fundamental frequency AC-ground points being identical fundamental frequency AC-ground points.

13. The oscillator arrangement according to any one of claims 9 to 11, **characterized in that** the oscillator arrangement comprises a third oscillator circuit according to claim 8.

14. The oscillator arrangement according to claim 13, **characterized in that** the first AC coupling is further AC coupled to a first fundamental frequency AC-ground point of the third oscillator circuit.

15. The oscillator arrangement according to claim 13, **characterized in that** the oscillator circuit comprises a second AC coupling between a second fundamental frequency AC-ground point of the first oscillator circuit and a second fundamental frequency AC-ground point of the third oscillator circuit, the second fundamental frequency AC-ground points being identical fundamental frequency AC-ground points and separate from the first fundamental frequency AC-ground points.

16. The oscillator arrangement according to any one of claims 13 to 15, **characterized in that** the third oscillator circuit has substantially a same fundamental frequency as the first and second oscillator circuits.

17. The oscillator arrangement according to any one of claims 13 to 15, **characterized in that** the third oscillator circuit has a fundamental frequency which is substantially twice the frequency as the fundamental frequencies of the first and second oscillator circuits.

18. The oscillator arrangement according to any one of claims 13 to 17, **characterized in that** the oscillator arrangement comprises a fourth oscillator circuit according to claim 8.

19. The oscillator arrangement according to claim 18, **characterized in that** the first AC coupling is further AC coupled to a first fundamental frequency AC-ground point of the fourth oscillator circuit.

20. The oscillator arrangement according to claim 18, **characterized in that** the oscillator arrangement further comprises a third AC coupling between a fundamental frequency AC-ground point of the second oscillator circuit being separate from the first fundamental frequency AC-ground point of the second oscillator circuit and a corresponding fundamental frequency AC-ground point of the fourth differential oscillator.

21. The oscillator arrangement according to any one of claims 18 to 20, **characterized in that** the fourth oscillator circuit having a fundamental frequency which is substantially the frequency of the fundamental frequency of the first and second oscillator circuit.

22. The oscillator arrangement according to any one of claims 18 to 20, **characterized in that** the fourth oscillator circuit having a fundamental frequency which is substantially twice the frequency of the fundamental frequency of the first and the second oscillator circuit.

23. The oscillator arrangement according to any one of claims 18 to 20, **characterized in that** the fourth oscillator circuit having a fundamental

frequency which is substantially twice the frequency of the fundamental frequency of the third oscillator circuit.

24. The oscillator arrangement according to any one of claims 9 to 23, **characterized in that** one AC coupling between two fundamental frequency AC-ground points, is further coupled to a voltage source via an AC-impedance element.

25. The oscillator arrangement according to any one of claims 9 to 23, **characterized in that** one AC coupling between two fundamental frequency AC-ground points, is further coupled to ground via an AC-impedance element.

26. The oscillator arrangement according to any one of claims 9 to 25, **characterized in that** one AC coupling between two fundamental frequency AC-ground points is a direct coupling.

27. The oscillator arrangement according to any one of claims 9 to 25, **characterized in that** one AC coupling between two fundamental frequency AC-ground points is a resistive coupling.

28. The oscillator arrangement according to any one of claims 9 to 25, **characterized in that** one AC coupling between two fundamental frequency AC-ground points is a capacitive coupling.

29. An oscillator arrangement comprising an arbitrary number of oscillator circuits, each oscillator circuit being according to claim 8, **characterized in that** the oscillator arrangement comprises an arbitrary number of AC couplings between fundamental frequency AC-ground points of the oscillator circuits, thus frequency locking the oscillator circuits.

30. A communication unit, **characterized in that** the communication unit comprises an oscillator circuit according to any one of claims 1 to 8.

31. A communication unit, **characterized in that** the communication unit comprises an oscillator arrangement according to any one of claims 9 to 28.

32. A method of frequency locking a first LC-oscillator to a second LC-oscillator, **characterized in that** the method comprises coupling by mutual inductance a resonance inductor of the first LC-oscillator with a resonance inductor of the second LC-oscillator.